Amendments to the Claims

Please amend the claims as follows:

Claims 1-3 (Canceled)

4. (Currently amended) ~~The method of claim 1~~ A method of processing digital image data comprising:

overlaying a hexon pattern structure on the digital image data to define a central area comprising a pixel or group of pixels, the geometric pattern comprising a group of six pixels and/or a pattern of six groups of pixels surrounding the central area, the overlaying of the geometric pattern defining a geometric region in relation to the central area,

assigning brightness values to the pixels within the groups of pixels and/or to individual groups of pixels,

comparing the brightness values of the groups of pixels using a local radial angular transform,

detecting regions of contrast within the image data, wherein the detected regions of contrast are used to determine if a triangular shape is present within the image.

5. (Currently amended) ~~The method of claim 1~~ A method of processing digital image data comprising:

overlaying a hexon pattern structure on the digital image data to define a central area comprising a pixel or group of pixels, the geometric pattern comprising a group of six pixels and/or a pattern of six groups of pixels surrounding the central area, the overlaying of the geometric pattern defining a geometric region in relation to the central area,

assigning brightness values to the pixels within the groups of pixels and/or to individual groups of pixels,

comparing the brightness values of the groups of pixels using a local radial angular transform,

detecting regions of contrast within the image data, wherein the detected regions of contrast are used to determine if a line junction is present within the image.

6. (Currently amended) ~~The method of claim 1~~ A method of processing digital image data comprising:

overlaying a hexon pattern structure on the digital image data to define a central area comprising a pixel or group of pixels, the geometric pattern comprising a group of six pixels and/or a pattern of six groups of pixels surrounding the central area, the overlaying of the geometric pattern defining a geometric region in relation to the central area,

assigning brightness values to the pixels within the groups of pixels and/or to individual groups of pixels,

comparing the brightness values of the groups of pixels using a local radial angular transform,

detecting regions of contrast within the image data, wherein the detected regions of contrast are used to determine if a disk shape is present within the image.

7. (Currently amended) ~~The method of claim 1~~ A method of processing digital image data comprising:

overlaying a hexon pattern structure on the digital image data to define a central area comprising a pixel or group of pixels, the geometric pattern comprising a group of six pixels and/or a pattern of six groups of pixels surrounding the central area, the overlaying of the geometric pattern defining a geometric region in relation to the central area,

assigning brightness values to the pixels within the groups of pixels and/or to individual groups of pixels,

comparing the brightness values of the groups of pixels using a local radial angular transform,

detecting regions of contrast within the image data, wherein the detected regions of contrast are used to determine if a ring shape is present within the image.

Claims 8-14 (Canceled)

(Note: The following claims 15-34 were renumbered by the Office from claims 16-35 in the First Office Action (mailing date: 8/12/2004). The new numbering is used herein.)

Claims 15-22 (Canceled)

23. (Currently amended) ~~The process of claim 1~~ A method of processing digital image data wherein the digital image data includes lines and edge features, [[and]] comprising:

overlaying a hexon pattern structure on the digital image data to define a central area comprising a pixel or group of pixels, the geometric pattern comprising a group of six pixels and/or a pattern of six groups of pixels surrounding the central area, the overlaying of the geometric pattern defining a geometric region in relation to the central area,

assigning brightness values to the pixels within the groups of pixels and/or to individual groups of pixels,

comparing the brightness values of the groups of pixels using a local radial angular transform, and

detecting regions of contrast within the image, wherein ~~the~~ detection of only lines of a predetermined width excludes the detection of at least some edge features.

24. (Currently amended) ~~The process of claim 1~~ A method of processing digital image data wherein the digital image data includes lines and edge features, [[and]] comprising:

overlaying a hexon pattern structure on the digital image data to define a central area comprising a pixel or group of pixels, the geometric pattern comprising a group of six pixels and/or a pattern of six groups of pixels surrounding the central area, the overlaying of the geometric pattern defining a geometric region in relation to the central area,

assigning brightness values to the pixels within the groups of pixels and/or to individual groups of pixels,

comparing the brightness values of the groups of pixels using a local radial angular transform, and

detecting regions of contrast within the image, wherein ~~the~~ detection of only lines of a predetermined darkness or brightness excludes the detection of at least some edge features.

Claim 25-30 (Canceled)

31. (Currently amended) A method of processing digital image data comprising providing a hierarchical description of shapes in an image according to scale by ~~means of application of~~ applying a local radial angular transform to the digital image data.

32. (Currently amended) The method of ~~claim 32~~ claim 31 wherein the shapes are lines.

33. (Currently amended) A method of processing digital image data comprising:

applying a local radial angular transform to the digital image data to provide transform coefficients of c_1, c_2, c_3, and c_4; and

utilizing ~~responses selected from the group consisting of~~ at least one of a modulus of the c_3 ~~|c3|~~ transform coefficient to detect line objects, ~~line responses,~~ a modulus of the c_2 ~~|c2|~~ transform coefficient to detect semi-plane objects, ~~semi-plane responses,~~ a modulus of the c_4 ~~|c4|~~ transform coefficient to detect triangle objects and ~~or line-junction/line-intersection~~ line junction objects, and a modulus of $\left(B_0 - \frac{c_1}{\sqrt{6}} \right)$ to identify ring objects and disk objects, wherein B_0 represents a brightness value or a color value of a central element of elements used in the local radial angular transform. ~~disks/ring responses for detecting objects.~~

34. (Canceled)

Please add the following new claims:

35. (New) A computer-readable medium having computer-executable instructions for performing operations comprising:

overlaying a hexon pattern structure on the digital image data to define a central area comprising a pixel or group of pixels, the geometric pattern comprising a group of six pixels and/or a pattern of six groups of pixels surrounding the central area, the overlaying of the geometric pattern defining a geometric region in relation to the central area,

assigning brightness values to the pixels within the groups of pixels and/or to individual groups of pixels,

comparing the brightness values of the groups of pixels using a local radial angular transform,

detecting regions of contrast within the image data, wherein the detected regions of contrast are used to determine if a triangular shape is present within the image.

36. (New) A computer-readable medium having computer-executable instructions for performing operations comprising:

overlaying a hexon pattern structure on the digital image data to define a central area comprising a pixel or group of pixels, the geometric pattern comprising a group of six pixels and/or a pattern of six groups of pixels surrounding the central area, the overlaying of the geometric pattern defining a geometric region in relation to the central area,

assigning brightness values to the pixels within the groups of pixels and/or to individual groups of pixels,

comparing the brightness values of the groups of pixels using a local radial angular transform,

detecting regions of contrast within the image data, wherein the detected regions of contrast are used to determine if a line junction is present within the image.

37. (New) A computer-readable medium having computer-executable instructions for performing operations comprising:

overlaying a hexon pattern structure on the digital image data to define a central area comprising a pixel or group of pixels, the geometric pattern comprising a group of six pixels and/or a pattern of six groups of pixels surrounding the central area, the overlaying of the geometric pattern defining a geometric region in relation to the central area,

assigning brightness values to the pixels within the groups of pixels and/or to individual groups of pixels,

comparing the brightness values of the groups of pixels using a local radial angular transform,

detecting regions of contrast within the image data, wherein the detected regions of contrast are used to determine if a disk shape is present within the image.

38. (New) A computer-readable medium having computer-executable instructions for performing operations comprising:

overlaying a hexon pattern structure on the digital image data to define a central area comprising a pixel or group of pixels, the geometric pattern comprising a group of six pixels and/or a pattern of six groups of pixels surrounding the central area, the overlaying of the geometric pattern defining a geometric region in relation to the central area,

assigning brightness values to the pixels within the groups of pixels and/or to individual groups of pixels,

comparing the brightness values of the groups of pixels using a local radial angular transform,

detecting regions of contrast within the image data, wherein the detected regions of contrast are used to determine if a ring shape is present within the image.

39. (New) A computer-readable medium having computer-executable instructions for performing operations that process digital image data, wherein the digital image data includes lines and edge features, the operations comprising:

overlaying a hexon pattern structure on the digital image data to define a central area comprising a pixel or group of pixels, the geometric pattern comprising a group of six pixels and/or a pattern of six groups of pixels surrounding the central area, the overlaying of the geometric pattern defining a geometric region in relation to the central area,

assigning brightness values to the pixels within the groups of pixels and/or to individual groups of pixels,

comparing the brightness values of the groups of pixels using a local radial angular transform, and

detecting regions of contrast within the image, wherein detection of only lines of a predetermined width excludes the detection of at least some edge features.

40. (New) A computer-readable medium having computer-executable instructions for performing operations that process digital image data, wherein the digital image data includes lines and edge features, the operations comprising:

overlaying a hexon pattern structure on the digital image data to define a central area comprising a pixel or group of pixels, the geometric pattern comprising a group of six pixels and/or a pattern of six groups of pixels surrounding the central area, the overlaying of the geometric pattern defining a geometric region in relation to the central area,

assigning brightness values to the pixels within the groups of pixels and/or to individual groups of pixels,

comparing the brightness values of the groups of pixels using a local radial angular transform, and

detecting regions of contrast within the image, wherein detection of only lines of a predetermined darkness or brightness excludes the detection of at least some edge features.

41. (New) A method of processing digital image data comprising providing a hierarchical description of shapes in an image according to scale by applying a local radial angular transform to the digital image data.

42. (New) The method of claim 41 wherein the shapes are lines.

43. (New) A computer-readable medium having computer-executable instructions for performing operations comprising:

applying a local radial angular transform to the digital image data to provide transform coefficients of c_1, c_2, c_3, and c_4; and

utilizing at least one of a modulus of the c_3 transform coefficient to detect line objects, a modulus of the c_2 transform coefficient to detect semi-plane objects, a modulus of the c_4 transform coefficient to detect triangle objects and line junction objects, and a modulus of $\left(B_0 - \frac{c_1}{\sqrt{6}} \right)$ to identify ring objects and disk objects, wherein B_0 represents a brightness value or a color value of a central element of elements used in the local radial angular transform.